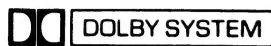


Service Manual

Cassette Deck
RS-M7

Front-Loading Vartical Hold Stereo Cassette Deck
with Full Auto-Stop Mechanism and Dolby NR

(Silver Type)
(Black Type)



This is the Service Manual for the following areas.

- For All European areas except United Kingdom.
- ▢ For Asia, Latin America, Middle East and Africa areas.
- △ For Australia.

RS-631 MECHANISM SERIES

Specifications

| | | | |
|------------------------|---|----------------------------------|--|
| Power requirement: | For All European areas except United Kingdom AC; 110/220V, 50/60Hz For Asia, Latin America, Middle East and Africa areas AC; 110/125/240V, 50/60Hz For Australia AC; 240V, 50/60Hz | Fast forward and rewind time: | Approx. 86 seconds with C-60 cassette tape |
| Power consumption: | 10W | Input: | MIC; sensitivity 0.25mV, input impedance 33 K Ω applicable microphone impedance 400 Ω ~10 K Ω LINE; sensitivity 60mV, input impedance 47 K Ω |
| Motor: | Electronic control DC motor | Output: | LINE; output level 420mV, output impedance 1 K Ω or less, load impedance 22 K Ω over HEADPHONE; output level 65mV, load impedance 8 Ω |
| Track system: | 4-track 2-channel stereo recording and playback | Rec/pb connection: | 5P DIN type; input sensitivity 0.25mV, impedance 8.2 K Ω output level 420mV, impedance 4.7 K Ω |
| Tape speed: | 4.8cm/s | Bias frequency: | 80kHz |
| Wow and flutter: | 0.08% (WRMS), \pm 0.20% (DIN) | Head: | 2-head system; 1-super permalloy head for record/playback 1-double-gap ferrite head for erasure |
| Frequency response: | CrO ₂ /Fe-Cr tape; 30~15,000Hz 30~14,000Hz (DIN) Normal tape; 30~14,000Hz 30~13,000Hz (DIN) | Dimensions: | 41.0cm(W) \times 14.2cm(H) \times 25.4cm(D) |
| Signal-to-noise ratio: | Dolby* NR in; 66dB (above 5kHz) Dolby NR out; 56dB (signal level = max. recording level, Fe-Cr/CrO ₂ type tape) | Weight: | 4.5kg |

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

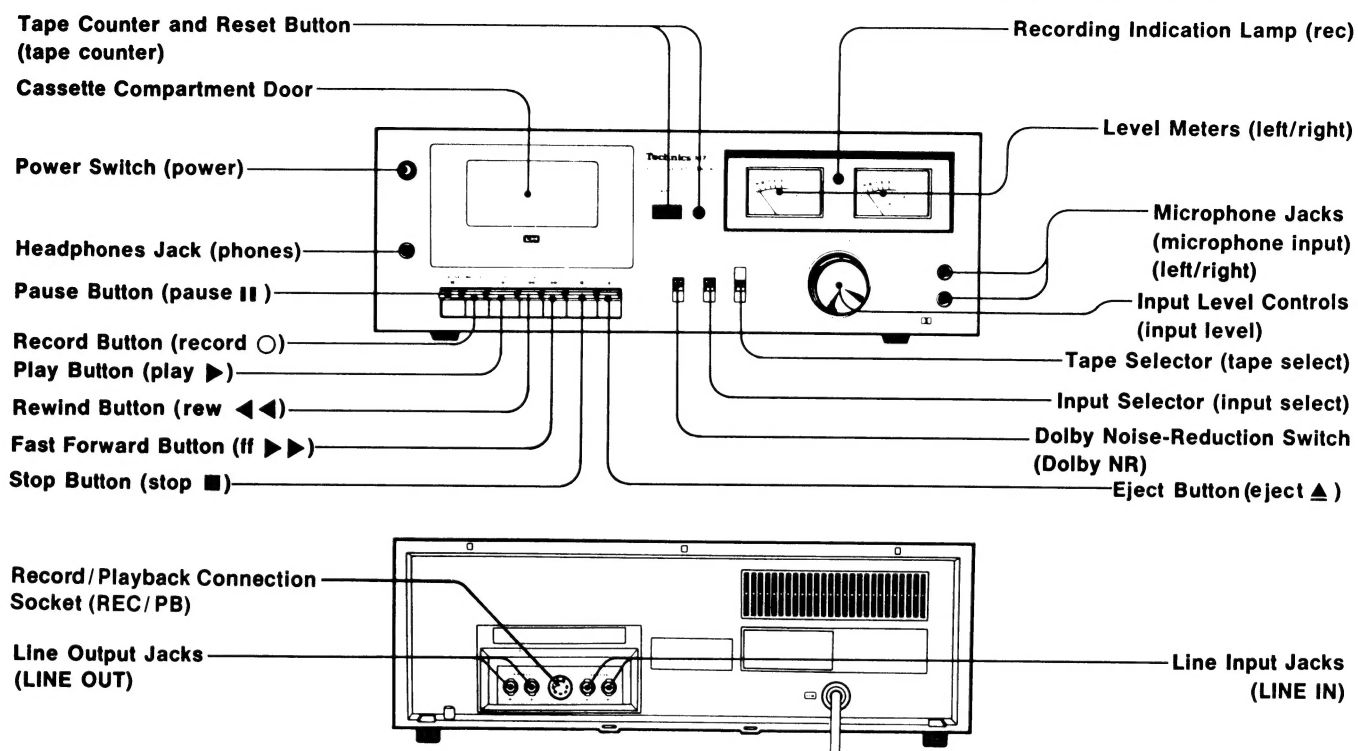


Fig. 1

DISASSEMBLY INSTRUCTIONS

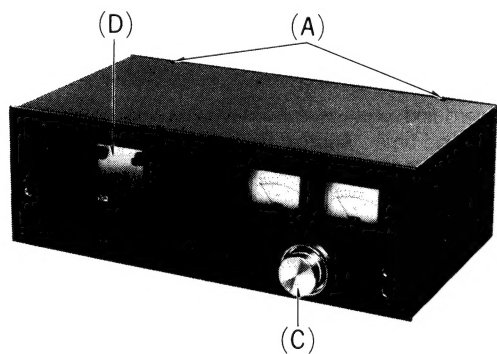


Fig. 2

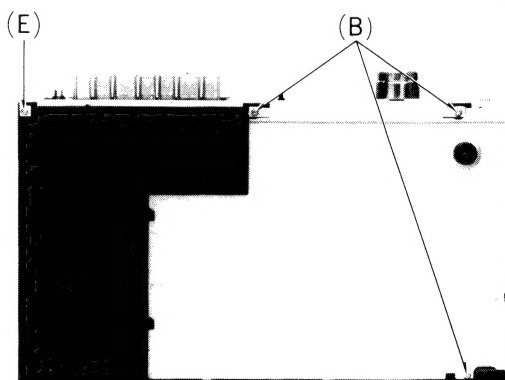


Fig. 3

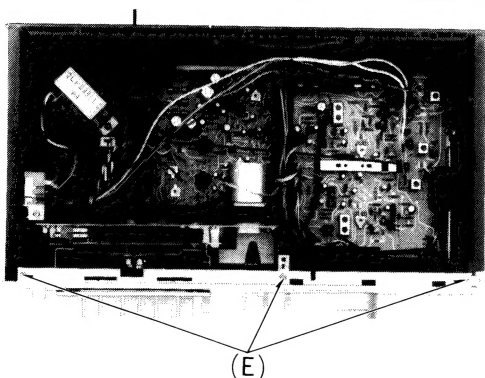


Fig. 4

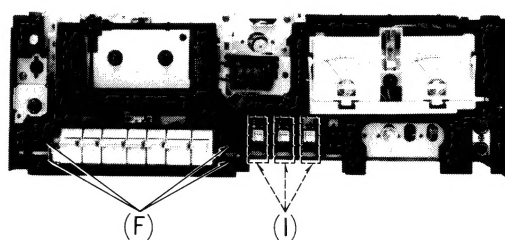


Fig. 5

RS-M7 RS-611 DEUTSCH

Messungen und Einstellungen

Anm.:

1. Für saubere Köpfe sorgen.
2. Für saubere Tonwelle und Andruckrolle sorgen.
3. Auf normale Raumtemperaturen: $20 \pm 5^\circ\text{C}$.
4. Dolby-Schalter: Aus.
5. Bandwahl Schalter: Normal-Position.

| Gegenstand | Messung und Einstellung |
|---|---|
| Senkrechtstellen des Kopfes Bedingung * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM | Justage des Aufnahme/Wiedergabekopfes 1. Den Meßaufbau zeigt Fig. 8. 2. Testband (QZZCFM, 8kHz) wiedergeben. 3. Einstellschraube (B) (Fig. 9) auf maximale Ausgangsspannung einstellen. 4. Beide Kanäle überprüfen und auf gleiche Ausgangsspannung einstellen. 5. Nach dem Abgleich Einstellschraube mit Lack sichern. |
| Bandgeschwindigkeit Bedingung * Wiedergabe Meßgerät: * Elektronischer Digitalzähler (RP-8067) * Testband...QZZCWAT | Genauigkeit der Bandgeschwindigkeit 1. Den Meßaufbau zeigt Fig. 10. 2. Testband (QZZCWAT 3000Hz) wiedergeben und Ausgangssignal dem Zähler zuführen. 3. Frequenz messen. 4. Beträgt die auf dem Testband aufgezeichnete Frequenz 3000Hz, so ergibt sich die Genauigkeit nach folgender Formel: Genauigkeit der Bandgeschwindigkeit = $= \frac{f-3000}{3000} \times 100(\%)$ worin f die gemessene Frequenz ist. 5. Die Messung soll im mittleren Teil des Bandes erfolgen. NORMALWERT: $\pm 1,5\%$ Einstellung: 1. Den mittleren Teil des Testbandes wiedergeben. 2. Die Einstellschraube VR (Vgl. Fig. 21) so verstellen, daß eine Frequenz von 3000Hz angezeigt wird. Schwankung der Bandgeschwindigkeit: Messung, wie oben beschrieben, für Anfang, mittleren Teil und Ende des Testbandes wiederholen und Schwankung wie folgt bestimmen: $\text{Schwankung} = \frac{f_1 - f_2}{3000} \times 100(\%)$ $f_1 = \text{Maximalwert}$ $f_2 = \text{Minimalwert}$ NORMALWERT: 1% |
| Wiedergabe-Verstärkung Bedingung * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM | 1. Den Meßaufbau zeigt Fig. 8. 2. Standard-Frequenz (315Hz) vom Testband wiedergeben und Ausgangsspannung messen. 3. Messung an beiden Kanälen durchführen. NORMALWERT: 0,39V Einstellung: 1. Abweichungen können durch Abgleich von VR3 (linker Kanal) und VR4 (rechter Kanal) (S. Fig. 21) korrigiert werden. 2. Nach erfolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren. |

| Gegenstand | Messung und Einstellung |
|--|---|
| Vormagnetisierung Bedingung * Aufnahme * Wenn die Vormagnetisierung eines Kanals eingestellt ist, kann die des anderen durchaus abweichend sein. * Wenn L5 oder L6 ersetzt wird, muß die Kernposition auf die Unterseite der Spule zurückgestellt und anschließend der optimale Vormagnetisierungsstrom abgestimmt werden. Meßgerät: * Oszillograf * Röhrenvoltmeter | 1. Den Meßaufbau zeigt Fig. 11. 2. Gerät auf "Aufnahme" und Bandwahlschalter auf "Normal" schalten. 3. Spannung vom Röhrenvoltmeter ablesen und Vormagnetisierungsstrom nach folgender Formel berechnen: Vormagnetisierungsstrom (A) = $= \frac{\text{Spannung am Röhrenvoltmeter (V)}}{10 (\text{Ohm})}$ NORMALWERT: 285 μA (Normal position) 240 μA (Fe-Cr position) 380 μA (CrO₂ position) 4. L5 (linker Kanal) und L6 (rechter Kanal) abgleichen (S. Fig. 21). |
| Löschstrom Bedingung * Aufnahme Meßgerät: * Röhrenvoltmeter * Oszillograf * Widerstand (1 Ω) | 1. 1- -Widerstand in die masseseitige Leitng des Löschkopfs einfügen (Fig. 13). 2. Röhrenvoltmeter zum 1- -Widerstand parallelschalten. 3. Gerät auf Aufnahme schalten und Spannungsabfall am 1- Widerstand messen. 4. Löschstrom nach folgender Formel ermitteln: Löschstrom (A) = $= \frac{\text{Die Spannung über beide Enden von R209 messen (V)}}{0.1 (\text{Ohm})}$ NORMALWERT: Größer als 40 mA (Normal position) Größer als 45 mA (Fe-Cr position) Größer als 55 mA (CrO₂ position) |
| Gesamt-Verstärkung Bedingung * Aufnahme und Wiedergabe * NF-Eingangsregler...Max. * Standard-Eingangspiegel Mikrofon - 72 \pm 3dB NF-Eingang - 24 \pm 3dB Meßgerät: * NF-Generator * Röhrenvoltmeter * Abschwächer * Oszillograf * Testband (Leerband) QZZCRA für Normal | 1. Den Meßaufbau zeigt Fig. 14. 2. Gerät auf "Aufnahme", und Bandwahlschalter auf Normal Position stellen. 3. Über den Abschwächer 1 kHz aus dem NF-Generator (- 24dB) dem NF-Eingang zuführen. 4. Den Abschwächer so einstellen, daß am NF-Ausgang stehen. 0,39V (- 7 dB) stehen. 5. Dieses Signal auf Testband (QZZCRA) aufnehmen. 6. Diese Aufnahme wiedergeben und prüfen, ob am NF-Ausgang 0,39V stehen. 7. Ist das nicht der Fall, so sind VR5 (linker Kanal) und VR6 (rechter Kanal) entsprechend abzugleichen (S. Fig. 21). 8. Ab Punkt 2 wiederholen. |

| Gegenstand | Messung und Einstellung |
|--|---|
| Pegelmesser Bedingung * Aufnahme * Eingangsregler...MAX Meßgerät: * Röhrenvoltmeter * Oszillograf * NF-Generator * Abschwächer | <ol style="list-style-type: none"> 1. Die Verbindungen des Prüfaufbaus sind in Fig. 15. wiedergegeben. 2. Bei LINE IN ein 1 kHz-Signal aus dem NF-Generator über den Abschwächer einspeisen. 3. Aufnahmepegelinsteller VR so verstellen, daß der Monitorpegel an LINE OUT zu 0,39V wird. 4. Einsteller VR501 (L-CH linker Kanal) und VR502 (R-CH, rechter Kanal) so einstellen, daß der Aussteuerungsanzeigmesser 0dB anzeigt. |
| Gesamt-frequenzgang Bedingung * Aufnahme und Wiedergabe * Eingangsregler...Max. Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Testband (Leerband) QZZCRA für Normal QZZCRX für CrO ₂ QZZCRY für FeCr | Anm.: Vor Messung und Abgleich des Gesamtfrequenzganges ist sicherzustellen, daß der Frequenzgang bei Wiedergabe korrekt ist (Vgl. entspr. Abschnitt). <ol style="list-style-type: none"> 1. Den Meßaufbau zeigt Fig. 14. 2. Testband einlegen. 3. 1 kHz vom NF-Generator über den Abschwächer dem NF-Eingang zuführen. 4. Den Abschwächer so einstellen, daß der Eingangspegel - 20dB des Standard-Aufnahmepegels beträgt (Standard-Aufnahmepegel - 24dB). 5. Bei dem gleichen Pegel sind die Frequenzen 50Hz, 100Hz, 200Hz, 1 kHz, 2kHz, 4kHz, 8kHz, und 10kHz (12kHz für CrO₂ band oder FeCr band) aufzunehmen. 6. Diese Aufnahme wiedergeben und dabei die Abweichungen der Pegel der einzelnen Frequenzen vom 1 kHz-Pegel in dB bestimmen. 7. Prüfen, ob die Abweichungen innerhalb der in Fig. 16 angegebenen Toleranzen liegen. 8. Den Vormagnetisierungs- und den Entzerrungs-Wahlschalter in die CrO₂- und Fe-Cr-Positionen stellen. 9. Die gleichen Messungen durchführen. 10. Sicherstellen, daß alle Meßwerte innerhalb der in Fig. 17 und 18 dargestellten Grenzen liegen. |
| Gesamt-Frequenzgang (Als Grundlage für den Abgleich) | <ol style="list-style-type: none"> 1. Werden die mittleren und hohen Frequenzen gemäß der durchgezogenen Linie in Fig. 19 zu stark wiedergegeben, so ist der Vormagnetisierungsstrom durch Drehen an L5 (linker Kanal) und L6 (rechter Kanal) zu erhöhen. 2. Erfolgt ein Abfall, wie ihn die Strichlinie in Fig. 19 zeigt, so ist an diesen Reglern entgegen der Pfeilrichtung zu drehen. Anm.: <ol style="list-style-type: none"> 1. Für die Messung des Vormagnetisierungsstromes sei auf den Abschnitt "Vormagnetisierung" hingewiesen. (S. 6.) <p style="text-align: center;">Abgleich 2-Aufnahme-Entzerrerspule</p> <p>Verläuft der Frequenzgang bei mittleren Frequenzen flach und zeigt bei höheren Frequenzen einen scharfen Anstieg oder Abfall entsprechend Fig. 20, sind die Korrekturspulen L3 (L-CH) und L4 (R-CH) für den Ausgleich bei Aufnahme mit normalem Magnetband.</p> |

| Gegenstand | Messung und Einstellung |
|--|--|
| Dolby-Schaltung Bedingung * Aufnahme * Eingangsregler...Max. Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Oszillograf | <ol style="list-style-type: none"> 1. Gerät in Stellung "Aufnahme" betreiben und Dolby-Schalter ausschalten. Dem NF-Eingang ein 5kHz-Signal zuführen, daß an TP3 (linker Kanal) und TP4 (rechter Kanal) - 34,5dB erhalten werden. 2. Prüfen, ob das Signal bei eingeschaltetem Dolby-Schalter um 8 (± 2,5) dB größer ist als bei ausgeschaltetem Dolby-Schalter. |

RS-M7 RS-611 FRANCAIS

MESURES ET REGLAGES

NOTA:

- Vérifiez que les têtes soient propres.
- Vérifiez que le cabestan et le galet-pression soient propres.
- Température ambiante admissible: $20 \pm 5^\circ\text{C}$.
- Sélecteur de Dolby: OUT.
- Sélecteur de bande: position normale.

| SECTION | MESURES ET REGLAGES |
|--|---|
| Azimatage de tête CONDITION * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon (azimatage)...QZZCFM | Réglage de la tête d'enregistrement / lecture <ol style="list-style-type: none"> 1. Branchez les appareils comme ci-dessous. 2. Lisez la bande étalon d'azimatage (QZZCFM, 8 kHz). 3. Réglez la vis d'orientation (B) fig. 9 de la tête d'enregistrement / lecture pour obtenir le niveau maximal à la sortie LINE OUT. 4. Mesurez les deux canaux, et ajustez les niveaux à égalité de tension de sortie. 5. Après réglage, bloquez la vis par une goutte de vernis. |
| Vitesse de défilement CONDITION * Position lecture Equipement: * Compteur électronique numérique ou fréquencemètre numérique (RP8067) * Bande étalon...QZZCWAT | Précision de la vitesse de défilement <ol style="list-style-type: none"> 1. Branchez les appareils comme ci-dessous. (Voir fig. 10). 2. Lisez la bande étalon (QZZCWAT, 3000 Hz) et appliquez le signal de sortie au fréquencemètre. 3. Mesurez sa fréquence. 4. Sur la base de 3000 Hz, déterminez la valeur à l'aide de la formule. $\text{Précision de vitesse} = \frac{f - 3000}{3000} \times 100\%$ avec f = valeur mesurée 5. Effectuez la mesure sur la partie médiane de la bande. <div>Valeur normale: $\pm 1.5\%$</div> Méthode de réglage <ol style="list-style-type: none"> 1. Lisez la bande étalon (milieu). 2. Ajustez la vis de réglage de vitesse VR indiquée fig. 21 pour que la fréquence devienne égale à 3000 Hz. Eluctuations de vitesse de défilement Faites les mesures de la même façon que ci-dessus (au début, au milieu et en fin de bande) et déterminez la différence entre les valeurs maximale et minimale, puis calculez comme suit. $\text{Fluctuations de vitesse} = \frac{f_1 - f_2}{3000} \times 100\%$ f ₁ = valeur maximale f ₂ = valeur minimale <div>Valeur normale: 1%</div> |
| Gain à la lecture CONDITION * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon...QZZCFM | <ol style="list-style-type: none"> 1. Branchez les appareils selon la fig. 8. 2. Lisez la partie "niveau standard" de la bande étalon (QZZCFM, 315 Hz) et mesurez le niveau de sortie, avec le voltmètre électronique, sur le jack LINE OUT. 3. Effectuez les mesures sur les deux canaux. <div>Valeur normal: 0.39 V</div> Réglage <ol style="list-style-type: none"> 1. Si la valeur mesurée n'est pas correct, réglez VR3 (canal gauche) et VR4 (droit) (Voir fig. 21). 2. Après réglage, vérifiez à nouveau la "réponse en fréquence à la lecture". |

| SECTION | MESURES ET REGLAGES |
|---|--|
| Courant de prémagnétisation CONDITION * Position enregistrement * Lorsqu'on règle le courant de prémagnétisation pour un seul canal; le courant de l'autre peut varier. * Lorsque L5 ou L6 est remplacé, prérégler la position du noyau au fond de la 3obine et puis réajuster le courant de polarisation au maximum. Equipement: * Oscilloscope * Voltmètre électronique | <ol style="list-style-type: none"> 1. Branchez les appareils comme ci-dessous. 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur "normal" (pour bande normale). 3. Lisez la tension sur le voltmètre électronique et calculez le courant de prémagnétisation selon la formule. $\text{Courant de prémagnétisation (A)} = \frac{\text{Tension lue sur voltm. élec. (V)}}{10(\Omega)}$ <div> 285 μA (position normale) Valeur normale: 340 μA (position Fe-Cr) 380 μA (position CrO₂) </div> 4. Réglez L5 (canal gauche) et L6 (canal droit) (voir emplacements des organes de réglage en Fig. 21). |
| Courant d'effacement CONDITION * Position enregistrement Equipement: * Voltmètre électronique * Oscilloscope * Résistance (1 Ω) | <ol style="list-style-type: none"> 1. Branchez la résistance de 1 Ω entre la borne de masse de la tête d'effacement et le fil de masse débranché (Voir fig. 13). 2. Branchez le voltmètre électronique aux bornes de la résistance de 1 Ω. 3. Placez l'appareil en position enregistrement et mesurez la tension aux bornes de la résistance de 1 Ω. 4. Déterminez le courant d'effacement à l'aide de la formule suivante: $\text{Courant d'effacement (A)} = \frac{\text{La tension traverse les 2 extrémités du R209 (V)}}{0.1(\Omega)}$ <div> pulse de 40 mA (position normale) Valeur normale = pulse de 45 mA (position Fe-Cr) plus de 55 mA (position CrO₂) </div> |
| Gain global CONDITION * Positions enregistrement / lecture * Commande de niveau LINE IN...MAX * Niveaux d'entrée normaux MIX - $72 \pm 3\text{ dB}$ LINE IN - $24 \pm 3\text{ dB}$ Equipement: * Générateur AF * Voltmètre électronique * Atténuateur * Oscilloscope * Bande étalon vierge QZZCRA pour type de bande normale | <ol style="list-style-type: none"> 1. Branchez les appareils comme sur la fig. 14. 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur position normale. 3. Appliquez un signal à 1 kHz (- 24 dB) du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 4. Réglez l'atténuateur pour que le niveau d'écoute simultanée sur LINE OUT soit de 0.39 V (- 7 dB). 5. Faites un enregistrement avec la bande étalon (QZZCRA). 6. Lisez la bande ainsi enregistrée, et vérifiez que la valeur lue sur le voltmètre électronique branché sur LINE OUT est bien de 0.39 V. 7. Si la valeur mesurée est différente, réglez VR5 (canal gauche) et VR6 (droit) (voir fig. 21). 8. Recommencez à partir du palier (2). |

| SECTION | MESURES ET REGLAGES |
|---|---|
| Indicateur de niveau CONDITION * Position enregistrement * Commande de niveau ...MAX Equipement: * Voltmètre électronique * Oscilloscope * Générateur AF * Atténuateur | 1. Branchez les appareil comme sur la fig. 15. 2. Appliquez un signal de 1 kHz du générateur AF, à travers l'atténuateur, au jack d'entrée LINE IN. 3. Réglez la commande de niveau d'entrée LINE IN pour que le niveau écoute simultanée sur LINE OUT soit de 0.39 V. 4. Réglez VR501 (canal gauche) et VR502 (droit) pour que les aiguilles des VU-mètres se placent sur 0 VU. |
| Courbe de réponse globale CONDITION * Positions enregistrement / lecture * Commande de niveau ...MAX Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Bande étalon vierge QZZCRA pour type normal QZZCRY pour CrO ₂ QZZCRY pour FeCr | Nota: Avant de mesurer et régler, vérifiez que la courbe de réponse en lecture est correct (pour la méthode de mesure, reportez-vous au paragraphe considéré). 1. Branchez les appareils de mesure comme sur la fig. 14. 2. Mettez la bande vierge étalon en place et placez l'appareil en position enregistrement. 3. Appliquez un signal à 1 kHz du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 4. Réglez l'atténuateur pour que le niveau d'entrée soit inférieur de -20 dB au niveau étalon d'enregistrement (-24 dB). 5. Enregistrez les fréquences de 50 Hz, 100 Hz, 200 Hz, 1 kHz, 2 kHz, 4 kHz et 8 kHz, 10 kHz (12 kHz pour bande CrO ₂ /bande Fe-Cr) à niveau constant. 6. Lisez cet enregistrement et exprimez en dB les différences entre le niveau de sortie de chaque fréquence et le niveau à 1 kHz. 7. Vérifiez que les valeurs mesurées s'inscrivent bien à l'intérieur du gabarit de courbe de réponse globale. 8. Mettre le sélecteur de polarisation et de compensation en position CrO ₂ et Fe-Cr. 9. Effectuez les mesures comme ci-dessus. 10. Vérifiez que les valeurs mesurées s'inscrivent bien à l'intérieur du gabarit de courbe de réponse globale avec bande au CrO ₂ et Fe-Cr ci-dessous. |
| Courbe de réponse globale (méthode normale de réglage) | 1. Lorsque la courbe de réponse dépasse le gabarit entre le médium et l'aigu, comme indiqué par le trait plein de la fig. 19, augmentez le courant de prémagnétisation en tournant L5 (canal gauche) et L6 (droit). 2. Lorsqu'elle est inférieure, comme indiqué par la ligne en trait interrompu, réduisez le courant de prémagnétisation en tournant L5 (canal gauche) et L6 (droit) en sens inverse. Nota: 1. Pour la mesure du courant de prémagnétisation, reportez-vous au paragraphe correspondant en page 6. Réglage 2—Utilisation des bobines de correction d'enregistrement Lorsque la courbe de réponse est plate dans le médium et croît ou chute fortement dans l'aigu, comme indiqué par la fig. 20, réglez en tournant les bobines L3 (canal gauche) et L4 (droit) de correction d'enregistrement avec les bandes normales. |

| SECTION | MESURES ET REGLAGES |
|---|--|
| Circuit Dolby CONDITION * Position enregistrement * Commande de niveau LINE IN...MAX Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Oscilloscope | 1. Placez l'appareil en position enregistrement et le sélecteur Dolby en position OUT, puis appliquez un signal à 5 kHz à l'entrée LINE IN pour obtenir -34,5 dB sur TP3 (canal gauche) et TP4 (droit). 2. Vérifiez que la valeur en position IN du sélecteur Dolby augmente de 8 (± 2.5) dB par rapport à celle obtenue en position OUT. |

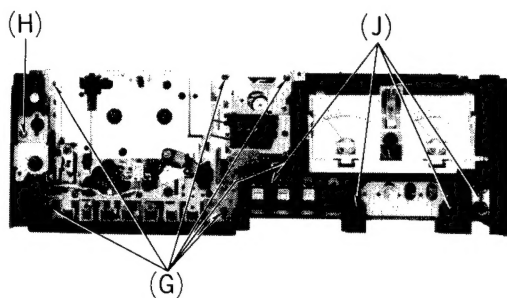


Fig. 6

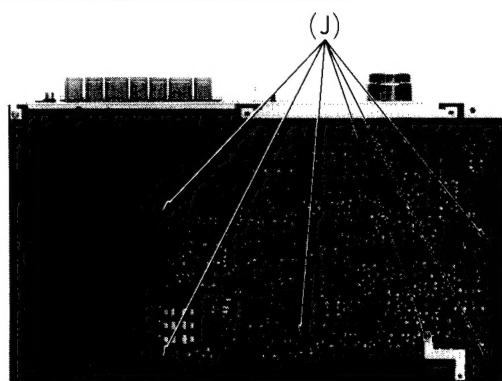


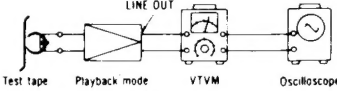
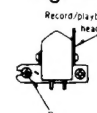
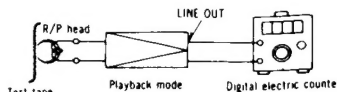
Fig. 7

| Procedure | To remove — | Remove — | Shown in fig. — |
|-----------|---|--|-----------------|
| 1 | Case cover | • 2 black screws (A) | 2 |
| 2 | Bottom cover | • 3 screws (B) | 3 |
| 3 | Front panel | • Control knob (C) • Cassette lid (D) • 4 screws (E) | 2 2 3, 4 |
| 4 | Control button assembly and cassette holder | • 4 red screws (F) | 5 |
| 5 | Mechanism | • 6 red screws (G) • Headphone holding screw (H) | 6 6 |
| 5 | Circuit board | • 3 switch shelters (I) • 10 screws (J) | 5 6, 7 |

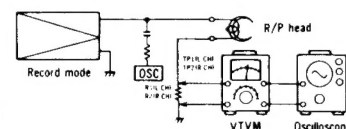
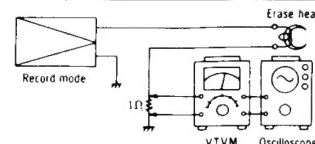
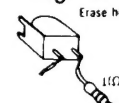
MEASUREMENT AND ADJUSTMENT METHODS

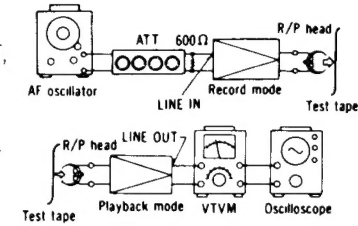
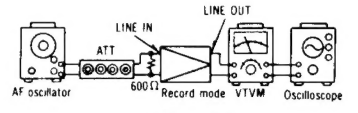
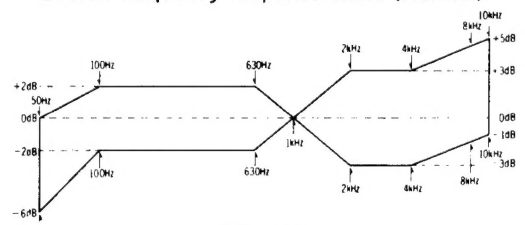
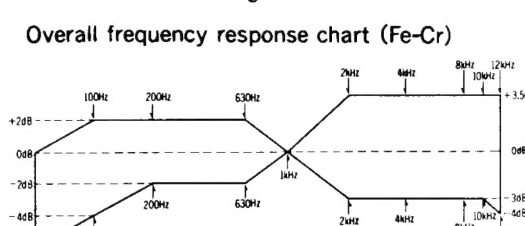
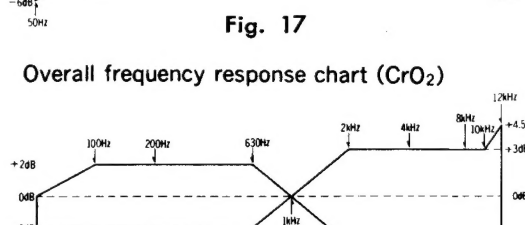
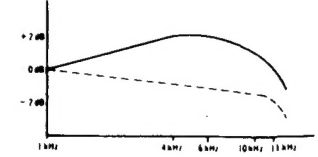
NOTE:

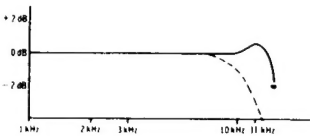
1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$).
4. Dolby NR switch: OUT.
5. Tape selector: Normal position.

| ITEM | MEASUREMENT & ADJUSTMENT |
|--|--|
| Head azimuth adjustment Condition: • Playback mode Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ... QZZCFM | <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 8. 2. Playback azimuth tape (QZZCFM 8 kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig. 9 so that output level at LINE OUT becomes maximum. 4. Measure both channels, and adjust levels for equal output. 5. After adjustment lock head adjustment screw with lacquer.   |
| Tape speed Condition: • Playback mode Equipment: • Digital electronic counter or frequency counter • Test tape ... QZZCWAT | Tape speed accuracy <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 10. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ where, f = measured value  |

| ITEM | MEASUREMENT & ADJUSTMENT |
|---|--|
| | <p>5. Take measurement at middle section of tape.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: $\pm 1.5\%$ </div> <p>Adjustment method</p> <ol style="list-style-type: none"> 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000 Hz. 3. Tape speed adjustment VR shown in fig. 21. <p>Tape speed fluctuation</p> <p>Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:</p> $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%)$ <p style="text-align: center;">f_1 = maximum value, f_2 = minimum value</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: 1% </div> |
| <p>Playback gain</p> <p>Condition:</p> <ul style="list-style-type: none"> • Playback mode <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Test tape ... QZZCFM | <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 8. 2. Playback standard recording level portion on test tape (QZZCFM 315 Hz), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: 0.39V </div> <p>Adjustment</p> <ol style="list-style-type: none"> 1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 21 on page 5). 2. After adjustment, check "Playback frequency response" again. |
| <p>Bias current</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record mode • When bias current is adjusted on one-channel only, note that bias current on the other channel may vary. • When L5 or L6 is the replaced, preset core position to bottom side of coil and then readjust optimum bias current. <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope | <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 11. 2. Place UNIT into record mode, and tape selector to normal position. 3. Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: 285μA (Normal position), 340μA (Fe-Cr position), 380μA (CrO₂ position) </div> <ol style="list-style-type: none"> 4. Adjust L5 (L-CH) and L6 (R-CH) (See fig. 21 on page 5). |
| <p>Erase current</p> <p>Condition:</p> <ul style="list-style-type: none"> • Record mode <p>Equipment:</p> <ul style="list-style-type: none"> • VTVM • Oscilloscope • Resistor (1Ω) | <ol style="list-style-type: none"> 1. Connect 1Ω resistor between the ground side terminal of erase head ground lead wire removed (See fig. 13). 2. Connect VTVM to both ends of 1Ω resistor. 3. Place UNIT into record mode, and measure voltage across the 1Ω resistor. 4. Determine erase current with the following formula: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of } 1\Omega \text{ resistor}}{1 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Standard value: More than 40mA (Normal position), More than 45mA (Fe-Cr position), More than 55mA (CrO₂ position) </div> |


Fig. 11

Fig. 12

Fig. 13

| ITEM | MEASUREMENT & ADJUSTMENT |
|---|--|
| Overall gain Condition: * Record/playback mode * Input level control ... MAX * Standard input level; MIC -72 ± 3 dB LINE IN ... -24 ± 3 dB Equipment: * AF oscillator * VTVM * Oscilloscope * ATT * Test tape (reference blank tape) ... QZZCRA for Normal | <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 14. 2. Place UNIT into record mode, and tape selector to normal position. 3. Supply 1 kHz signal (-24 dB) from AF oscillator, through ATT, to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.39 V. 5. Using test tape, make recording. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.39 V. 7. If measured value is not 0.39 V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 21 on page 5). 8. Repeat from step (2).  <p style="text-align: center;">Fig. 14</p> |
| Level meter Condition: * Record mode * Input level control ... MAX Equipment: * VTVM * Oscilloscope * AF oscillator * ATT | <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 15. 2. Supply 1 kHz signal from the AF oscillator, through the ATT, to the LINE IN jack. 3. Adjust ATT so that the monitor level at LINE OUT becomes 0.39 V. 4. Adjust VR501 (L-CH) and VR502 (R-CH) so that the level meters indicate 0 dB.  <p style="text-align: center;">Fig. 15</p> |
| Overall frequency response Condition: * Record/playback mode * Input level control ... MAX Equipment: * VTVM * AF oscillator * ATT * Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRX for CrO ₂ ... QZZCRY for Fe-Cr | <ol style="list-style-type: none"> 1. Test equipment connection is shown in fig. 14. 2. Load reference blank test tape and place UNIT into record mode. 3. Supply 1 kHz signal from AF oscillator through ATT to LINE IN. 4. Adjust ATT so that input level is -20 dB below standard recording level (standard recording level -24 dB). 5. Record each frequency 50 Hz, 100 Hz, 200 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz and 10 kHz (12 kHz for CrO₂ and Fe-Cr tape) at the same level. 6. Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1 kHz. 7. Make sure that the measured value is within the range specified in the overall frequency response chart. 8. Set the tape selector to CrO₂, Fe-Cr position. 9. Measure as same as manner above. 10. Make sure that the measured value is within the range specified in the overall frequency response chart for CrO₂ and Fe-Cr tape shown in fig. 17 and 18. <p style="text-align: center;">Overall frequency response chart (Normal)</p>  <p style="text-align: center;">Fig. 16</p> <p style="text-align: center;">Overall frequency response chart (Fe-Cr)</p>  <p style="text-align: center;">Fig. 17</p> <p style="text-align: center;">Overall frequency response chart (CrO₂)</p>  <p style="text-align: center;">Fig. 18</p> |
| Overall frequency response adjustment (As a standard for adjustment) | <p>Adjustment 1—Using bias current</p> <ol style="list-style-type: none"> 1. When the frequency response between the middle and high-frequency range becomes higher than the standard value, as shown by the solid line in fig. 19, increase the bias current by turning L5 (L-CH), L6 (R-CH). 2. When it becomes lower, as shown by dotted line, reduce the bias current by turning L5 (L-CH), L6 (R-CH).  <p style="text-align: center;">Fig. 19</p> |

| ITEM | MEASUREMENT & ADJUSTMENT |
|--|--|
| | <p>Note: For the method of bias current measurement, refer to "Bias current adjustment" on page 3.</p> <p>Adjustment 2—Using the peaking coil for recording equalization</p> <p>When the frequency response is flat in the middle-frequency range and makes a sharp rise or drop in the high-frequency range, as shown in fig. 20, adjust by turning the peaking coil L3 (L-CH), L4 (R-CH) for normal tape recording equalization.</p>  <p>The graph shows a frequency response curve. The vertical axis is labeled with +7.00, 0.00, and -7.00. The horizontal axis is labeled with 1 kHz, 2 kHz, 3 kHz, 10 kHz, and 11 kHz. The curve is flat at 0.00 dB from 1 kHz to about 8 kHz, then rises sharply to about +5 dB at 10 kHz, and then drops sharply to about -5 dB at 11 kHz.</p> <p>Fig. 20</p> |
| <p>Dolby NR circuit Condition: • Record mode • Input level control ... MAX Equipment: • VTVM • AF oscillator • ATT • Oscilloscope</p> | <ol style="list-style-type: none">1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5 dB at TP3 (L-CH), TP4 (R-CH) (frequency 5 kHz).2. Confirm that the value at IN position is 8 (± 2.5) dB greater than the value at OUT position of Dolby NR switch. |

ADJUSTMENT PARTS LOCATION

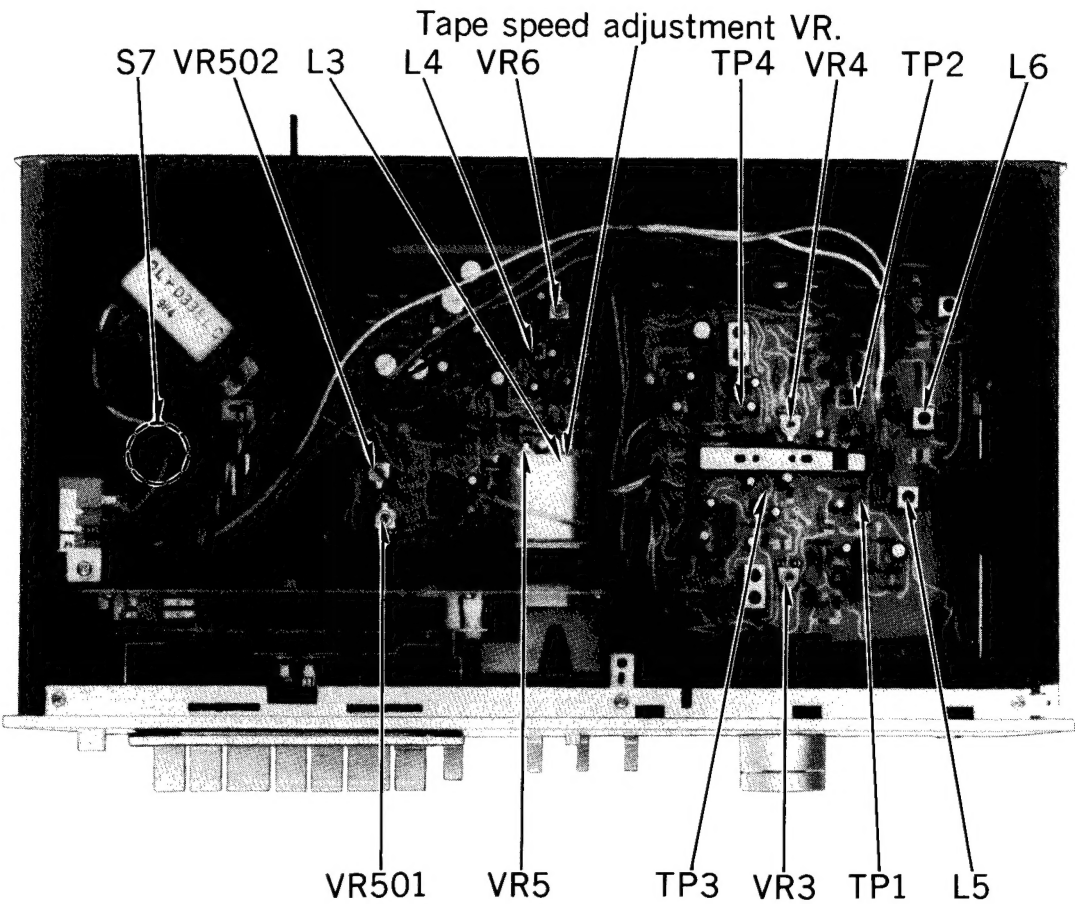
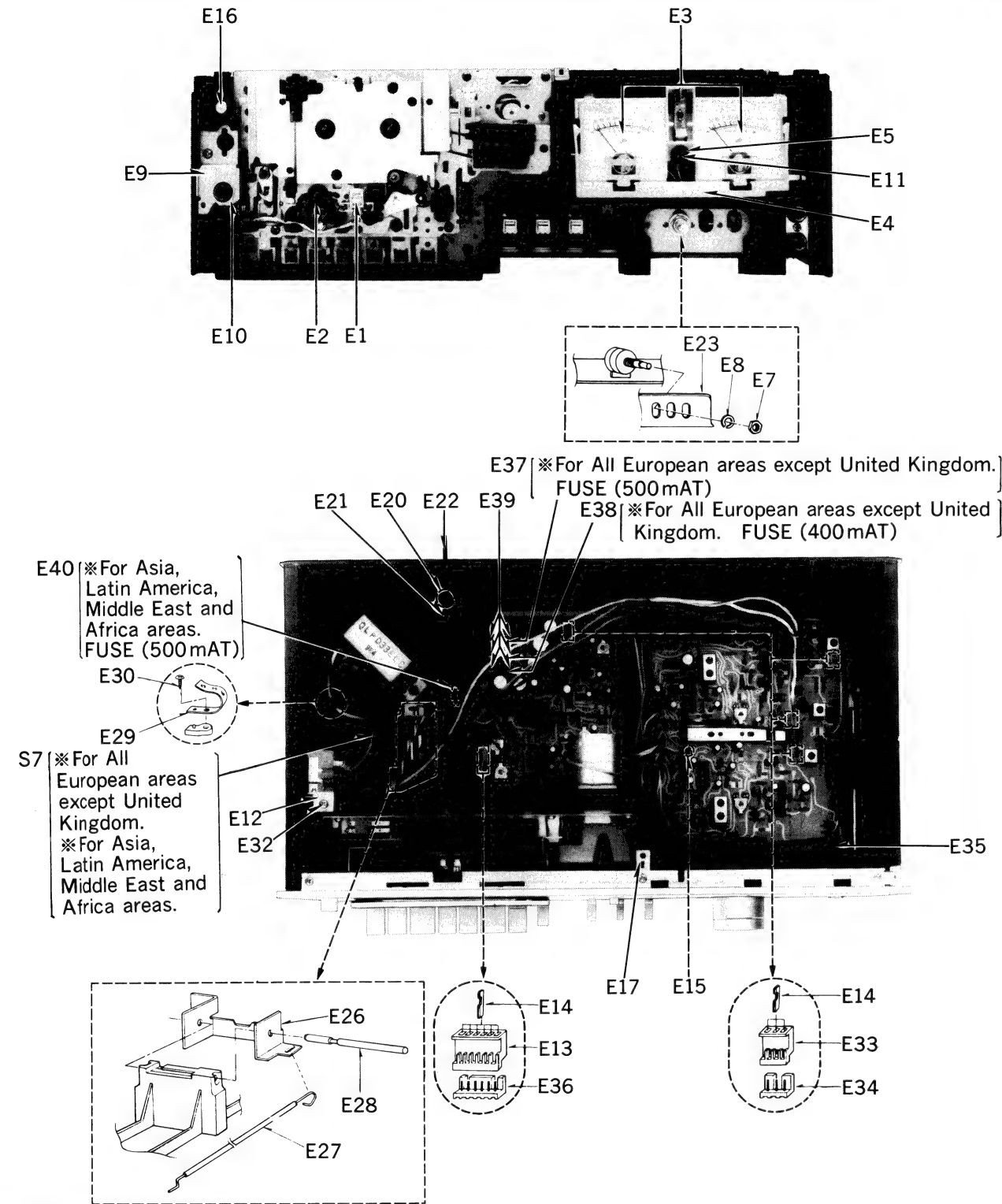


Fig. 21

ELECTRICAL PARTS LOCATION

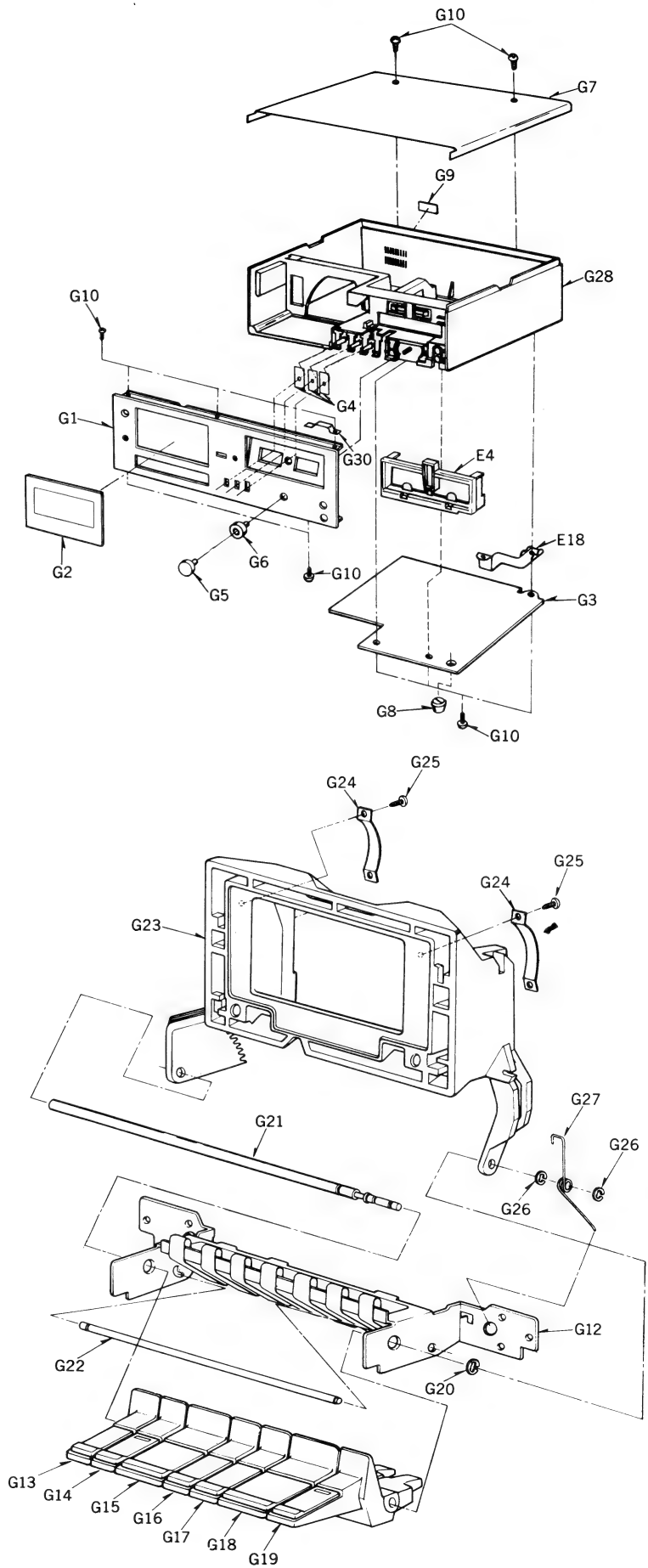


NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

| Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|-------------------------|-------------|-------------------------|--|----------|-------------------------|---|-------------------|-------------------------|---|---------------------|---------------------------|
| ELECTRICAL PARTS | | | | | | | | | | | |
| E1 | QWY4113Z | Record/Playback Head | E14 | QJT1054 | Contact | E20 | Δ QJB1425 | Cord Bushing | E28 | QMN2381 | Recording Shaft |
| E2 | QWY21222B | Erase Head | E15 | QJT0055 | Pin Connector | E21 | Δ QJB1425 | Cord Clamper | E29 | RME144ZA | Cord Clamper |
| E3 | QSL1108RNM | Level Meter | E16 | QXB0531 | Push Button Assembly | E22 | Δ QTD1129 | " | E30 | XTN3+10B | Tapping Screw Φ 3x10 |
| E4 | QKJ0333 | Level Meter Holder | *For All European areas except United Kingdom and for Australia. | | | E23 | Δ QTD1164 | Cord Clamper | E31 | XTW3+12B | Tapping Screw Φ 3x12 |
| E5 | QBG1366 | Rubber Bushing | Δ QXB0601 | | | E24 | Δ QJC1204M | AC Power Cord | E32 | QJS1921TN | 3 Pin Housing |
| E7 | QNQ1039 | Nut | *For All European areas except United Kingdom and for Australia. | | | E25 | Δ QJC1203M | " | E33 | QJP1921TN | 3 Pin Post |
| E8 | QWQ1133 | Washer | Δ QXB0499 | | | E26 | Δ QJC1208M | " | E34 | QTS1460 | Shield Plate |
| E9 | QMA3671 | Headphone Jack Angle | *For Asia, Latin America, Middle East and Africa areas. | | | E27 | Δ QJC1208M | " | E35 | QJP1922TN | 6 Pin Post |
| E10 | QNQ1070 | Nut | Δ QXB0637 | | | *For All European areas except United Kingdom. | | | E36 | XBAQ0003 | Fuse (500mA) |
| E11 | XAMQ22P100N | Pilot Lamp | *For Asia, Latin America, Middle East and Africa areas. | | | *For Asia, Latin America, Middle East and Africa areas. | | | E37 | Δ XBAQ0007 | Fuse (400mA) |
| E12 | QMA3672 | Power Switch Angle | Δ QXB0637 | | | *For All European areas except United Kingdom. | | | E38 | Δ QTF1054 | Fuse Holder |
| E13 | QJS1922TN | 6 Pin Housing | *For Asia, Latin America, Middle East and Africa areas. | | | *For All European areas except United Kingdom. | | | E39 | Δ XBA2E03NS5 | Fuse (500mA) |
| | | | E17 | QTS1458 | Earth Plate-A | E23 | QMA3670 | Volume Angle | *For Asia, Latin America, Middle East and Africa areas. | | |
| | | | E18 | QTS1459 | Earth Plate-B | E26 | QMA3673 | Recording Angle | | | |
| | | | | | | E27 | QBS1122 | Recording Wire | | | |

CABINET PARTS

NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

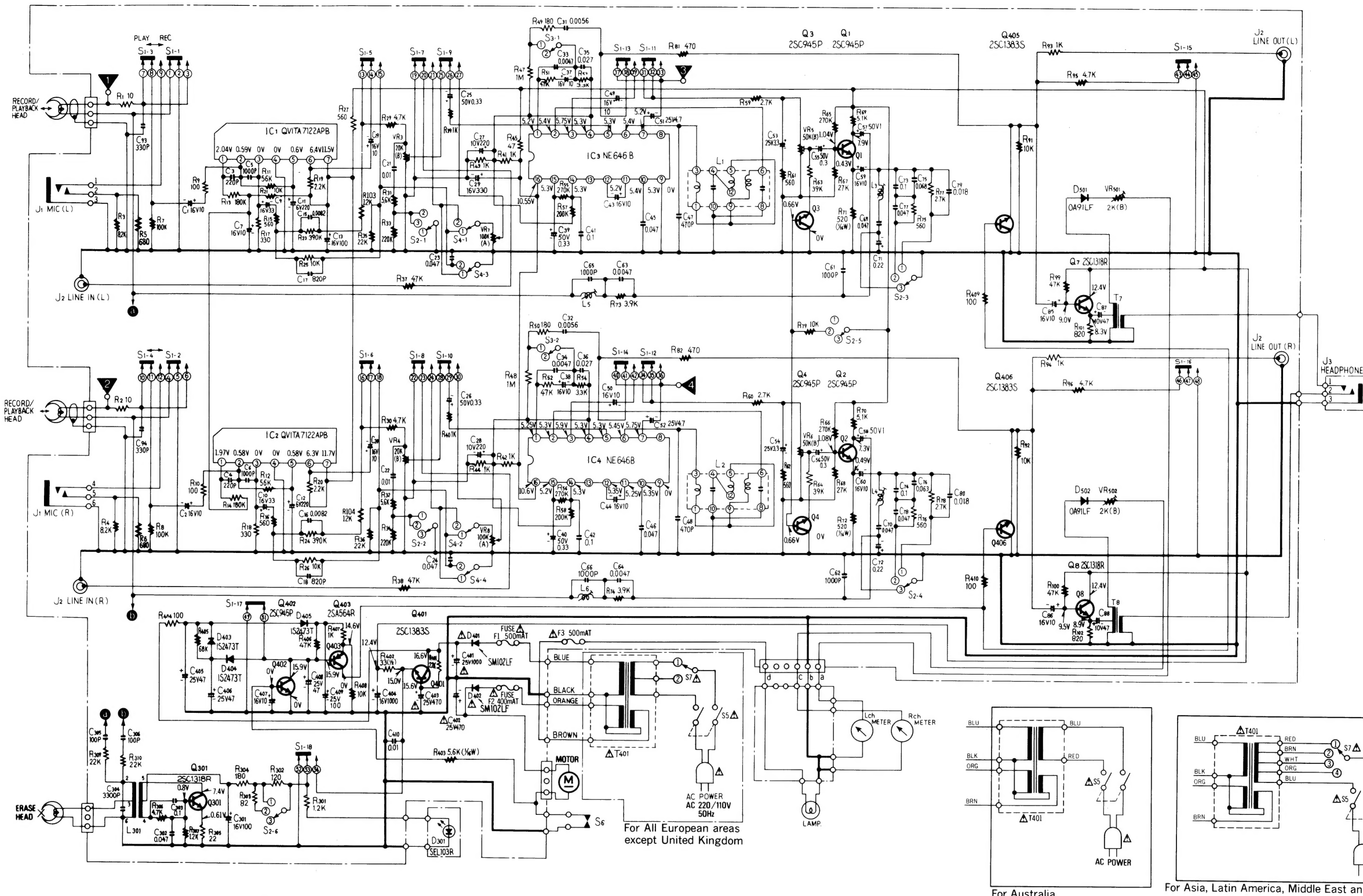


| Ref. No. | Part No. | Part Name & Description |
|---|-----------------------|-----------------------------------|
| CABINET PARTS | | |
| G1 | QYP0851 | Front Panel Assembly |
| G2 | QYP0850 | Front Panel Assembly |
| G2 | QYF0375 | Cassette Lid Assembly |
| G2 | QYF0376 | " |
| G3 | QGC1135 | Bottom Board Assembly |
| G4 | QK22940 | Switch Shelter |
| G4 | QK22938 | " |
| G5 | QGT1452 | Volume Knob-1 |
| G6 | QGT1440S | Volume Knob-2 |
| G7 | QGC1139 | Case Cover |
| G8 | QKA1078 | Rubber Foot |
| G9 | QGS2674 | Main Name Plate |
| *For All European areas except United Kingdom. | | |
| Δ QGS2660 | | |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| Δ QGS2669 | | |
| *For Australia. | | |
| G10 | XTN3+10B | Tapping Screw Φ 3x10 |
| G11 | XTN4+10B | Tapping Screw Φ 4x10 |
| G12 | QXA0720 | Push Button Holding Angle |
| G13 | QGO1580 | "Silver Type" Pause Button |
| G14 | QGO1593 | "Black Type" Record Button |
| G14 | QGO1579 | "Silver Type" Record Button |
| G15 | QGO1592 | "Black Type" Playback Button |
| G15 | QGO1578 | "Silver Type" Playback Button |
| G16 | QGO1591 | "Black Type" Rewind Button |
| G16 | QGO1577 | "Silver Type" Rewind Button |
| G17 | QGO1590 | "Black Type" Fast Forward Button |
| G17 | QGO1576 | "Silver Type" Fast Forward Button |
| G18 | QGO1589 | "Black Type" Stop Button |
| G18 | QGO1575 | "Silver Type" Stop Button |
| G19 | QGO1574 | "Black Type" Eject Button |
| G19 | QGO1587 | "Silver Type" Eject Button |
| G20 | XUC4FT | Stop Ring Φ 4 |
| G21 | QMN2382 | Push Button Shaft-A |
| G22 | QMN1861 | Push Button Shaft-B |
| G23 | QKF6011 | Cassette Holder Assembly |
| G24 | QBP1818 | Holder Spring |
| G25 | XTN26+5B | Tapping Screw Φ 2.6x5 |
| G26 | XUC3FT | Stop Ring Φ 3 |
| G27 | QBN1641 | Lid Spring |
| G28 | QKM1368K | Main Case |
| *For Asia, Latin America, Middle East, Africa and All European areas except United Kingdom. | | |
| Δ QKM1373K | | |
| *For Australia. | | |
| G29 | QBW2066 | Spacer |
| G30 | QBP1848 | Earth Spring |
| ACCESSORIES | | |
| A1 | QEB0125 | Connection Cord |
| A2 | Δ QJP0603S | AC Plug Adaptor |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| A3 | Δ QFTC30S011TZ | Demonstration Tape |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| A4 | Δ QQT2575 | Instruction Book |
| *For All European areas except United Kingdom. | | |
| Δ QQT2572 | | |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| Δ QQT2606 | | |
| *For Australia. | | |
| PACKINGS | | |
| P1 | QPN3821 | Inside Carton |
| P2 | QPA0459 | Cushion-A |
| P3 | QPA0460 | Cushion-B |
| P4 | XZB16X22A05 | Poly Bag |
| P5 | XZB40X60A02 | " |

SCHEMATIC DIAGRAM

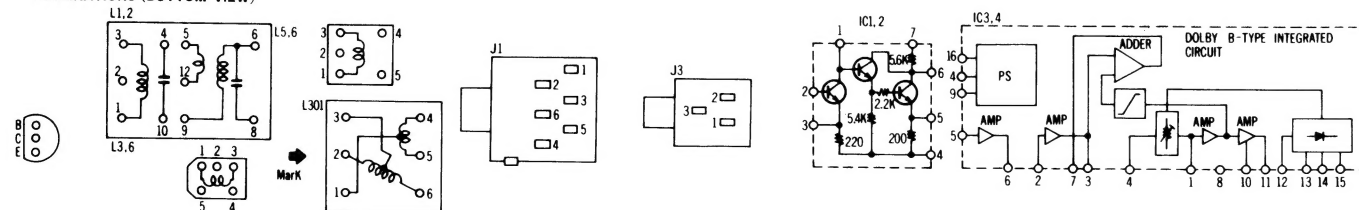
NOTE: RESISTORS
 ERD ... Carbon
 ERG ... Metal-oxide
 ERO ... Metal-film
 ERX ... Metal-film
 ERQ ... Fuse type metallic
 ERC ... Solid
 ERF ... Cement

CAPACITORS
 ECG ... Ceramic
 ECK ... Ceramic
 ECC ... Ceramic
 ECF ... Ceramic
 ECQ ... Polyester
 ECQ ... Polyester
 ECQ ... Polypropylene
 ECE ... Electrolytic
 ECE ... Non polar electrolytic
 ECQS ... Polystyrene
 ECS ... Tantalum



| Ref. No. | Part No. | Ref. No. | Part No. |
|---------------------------|--------------|--------------------------------|--------------|
| RESISTORS | | | |
| R1, 2 | ERD25TJ100 | C41, 42 | ECFWD104KXY |
| R5, 6 | ERD25TJ681 | C43, 44 | ECEA1HS100 |
| R9, 10 | ERD25TJ101 | C45, 46 | ECFTD473MXY |
| R13, 14 | ERD25TJ184 | C47, 48 | ECKD1H471KB |
| R17, 18 | ERD25TJ331 | C49, 50 | ECEA1HS100 |
| R19, 20 | ERD25TJ222 | C51, 52 | ECEA25Z47 |
| R23, 24 | ERD25TJ394 | C53, 54 | ECEA50Z3R3 |
| R25, 26 | ERD25TJ103 | C55, 56 | ECEA50Z2R1 |
| R27 | ERD25TJ271 | C57, 58 | ECEA1HS100 |
| R31, 32 | ERD25TJ562 | C59, 60 | ECEA1HS100 |
| R37, 38 | ERD25TJ473 | C61, 62 | ECKD1H102MD |
| R41, 42, 43, 44 | ERD25TJ102 | C63, 64 | ECFTD472KVY |
| R45 | ERG12ANJ470 | C65, 66 | ECQS1122KZ |
| R47, 48 | ERD25TJ105 | C69, 70 | ECFTD473KXY |
| R49, 50 | ERD25TJ181 | C71, 72 | ECEA50Z2R2 |
| R53, 54 | ERD25TJ332 | C73, 74 | ECFWD104KXY |
| R63, 64 | ERD25TJ393 | C75, 76 | ECFTD683KXY |
| R75, 76 | ERD25TJ561 | C77, 78 | ECFTD473KXY |
| R77, 78 | ERD25TJ272 | C79, 80 | ECFTD183KVY |
| R93, 94 | ERD25TJ102 | C85, 86 | ECEA1HS100 |
| R101, 102 | ERD25TJ821 | C87, 88 | ECEA1AS470 |
| R103, 104 | ERD25TJ123 | C93, 94 | ECKD1H331K |
| R301 | ERD25TJ122 | C301 | ECEA1ES101 |
| R302 | ERG12ANJ121 | C302 | ECFTD473KXY |
| R303 | ERD25TJ820 | C303 | ECFWD104KXY |
| R304 | ERG12ANJ181 | C304 | ECQS1332KZ |
| R305 | ERD25TJ220 | C305, 306 | ECKD1H101K |
| R309, 310 | ERD25TJ223 | C401 | ECEA1ES102 |
| R401 | ERD25TJ222 | C402, 403 | ECEA1ES471 |
| R402 | ERG12ANJ330 | C404 | ECEA1CS102 |
| R404 | ERG12ANJ101 | C405, 406 | ECEA1ES470 |
| R407 | ERD25TJ102 | C407 | ECEA1HS100 |
| VARIABLE RESISTORS | | | |
| VR3, 4 | EVLS3AA00824 | Q1, 2, 3, 4 | 2SC1684 |
| VR5, 6 | EVLS3AA00854 | Q7, 8, 301 | 2SC1318 |
| VR7, 8 | EWKN3AF21A15 | Q401 | 2SC1383 |
| VR501, 502 | EVLS3AA00823 | Q402 | 2SC1684 |
| CAPACITORS | | | |
| C1, 2 | ECEA16210 | Q403 | 2SA564 |
| C3, 4 | ECCD1H221K | Q405, 406 | 2SC1383 |
| C5, 6 | ECKD1H102ZF | DIODES & RECTIFIERS | |
| C7 | ECEA1HS100 | D301 | SEL103R |
| C9, 10 | ECEA1CS330 | D401, 402 | SM102 |
| C11, 12 | ECEA1AS221 | D403, 404, 405 | 1S2473T |
| C13 | ECEA1ES101 | D501, 502 | OA91 |
| C15, 16 | ECFTD822KVY | INTEGRATED CIRCUITS | |
| C17, 18 | ECKD1H821KB | IC1, 2 | QVITA7122BPB |
| C19, 20 | ECEA1HS100 | IC3, 4 | NE646B |
| C21, 22 | ECFTD103KVY | | |
| C23, 24 | ECFTD473MXY | | |
| C25, 26 | ECEA50MR33 | | |
| C27, 28 | ECEA1AS221 | | |
| C29 | ECEA1CS331 | | |
| C31, 32 | QCQ05562JZ | | |
| C33, 34 | QCQ05472JZ | | |
| C35, 36 | QCQ05573JZ | | |
| C37, 38 | ECEA1HS100 | | |
| C39, 40 | ECEA50Z3R3 | | |

TERMINATIONS (BOTTOM VIEW)



For Australia.

For Asia, Latin America, Middle East and Africa areas.

NOTE:

- S1-1~S1-18: Record/playback select switch (shown in playback position).
- S2-1~S2-6: Equalizer bias select switch.
 - CrO₂, 2: Fe-Cr, 3: Normal.
- S3-1, S3-2: Dolby IN/OUT select switch (shown in OUT position).
- S4-1~S4-4: Input select switch.
 - MIC, 2: LINE IN.
- S5: Power ON/OFF switch.
- S6: Motor, muting switch.
- S7: AC power voltage select switch.
- VR3, VR4: Playback gain adjustment VR.
- VR5, VR6: Recording gain adjustment VR.
- VR7, VR8: Input level control.
- VR501, VR502: Level meter adjustment VR.
- L3, L4: Recording equalizer adjustment coil.
- L5, L6: Bias current adjustment coil.
- Resistor values are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000.
- Capacitor values are in microfarads (μF) unless specified otherwise. P=Pico-farads.
- The mark (▼) shows test point. e.g. ▼=Test point 1.
- All voltage values shown in circuitry are under no signal condition with volume control at minimum position. For measurement, use VTVM.

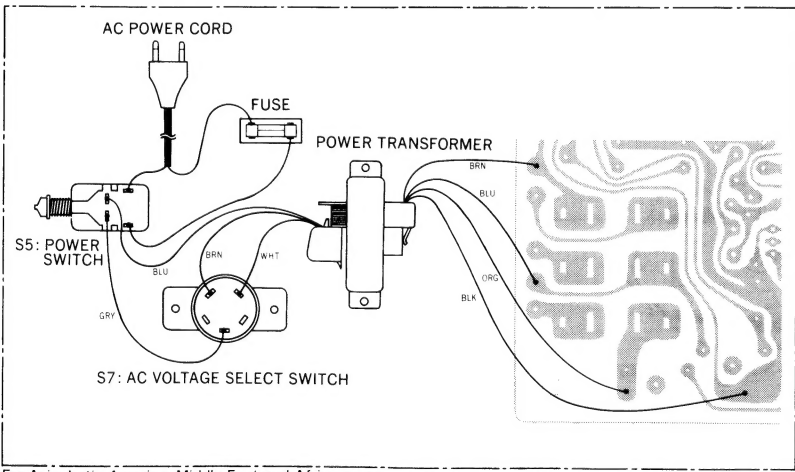
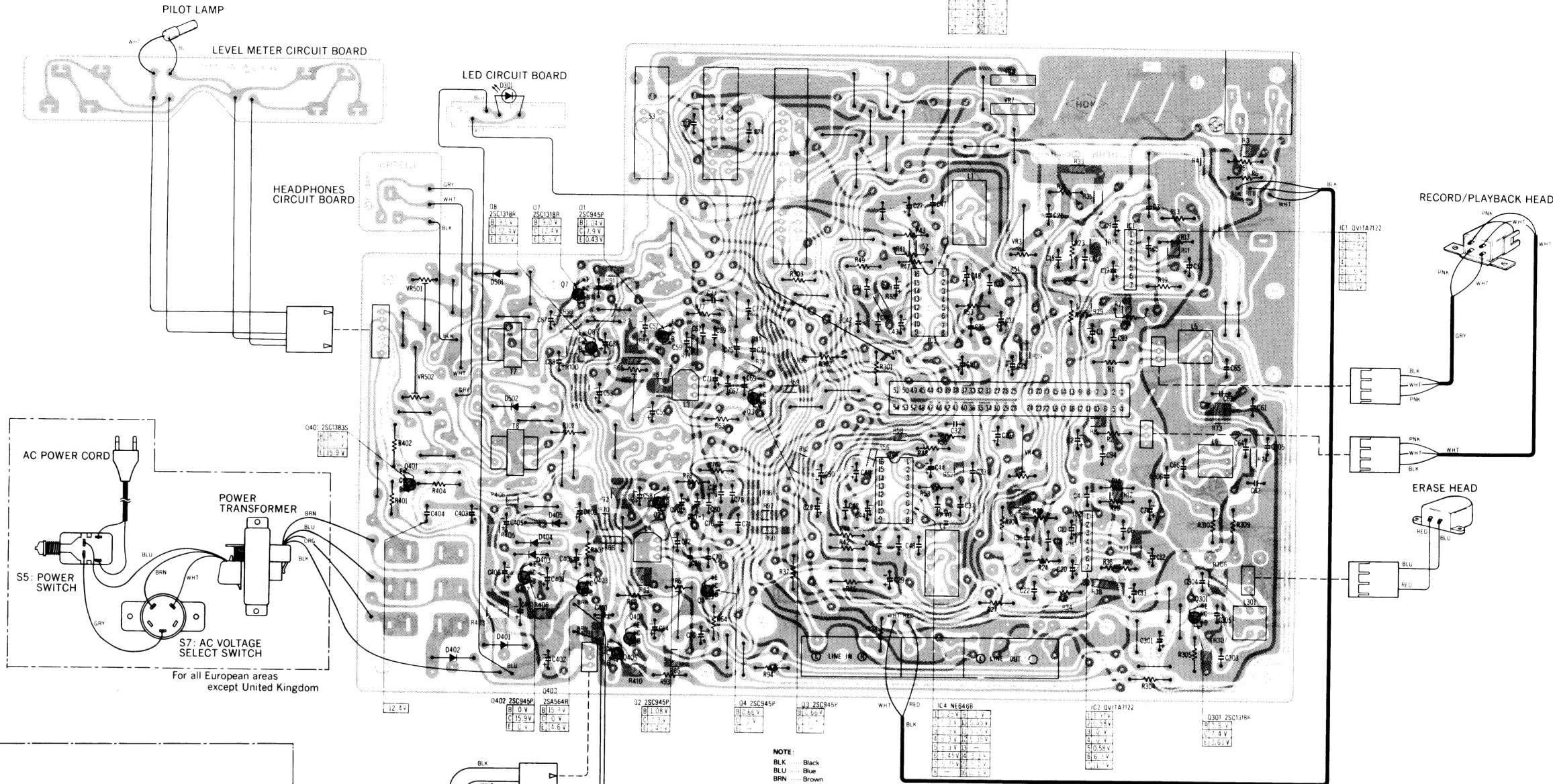
SPECIFICATIONS • Input level control... MAX

| | |
|---|--|
| Playback S/N ratio Test tape ... QZZCFM | More than 45dB |
| Overall distortion Test tape ... QZZCRA for Normal ... QZZCRX for CrO ₂ ... QZZCRY for Fe-Cr | Less than 3% (Normal) Less than 4% (Fe-Cr, CrO ₂) |
| Overall S/N ratio Test tape ... QZZCRA | More than 43dB (without NAB filter) |

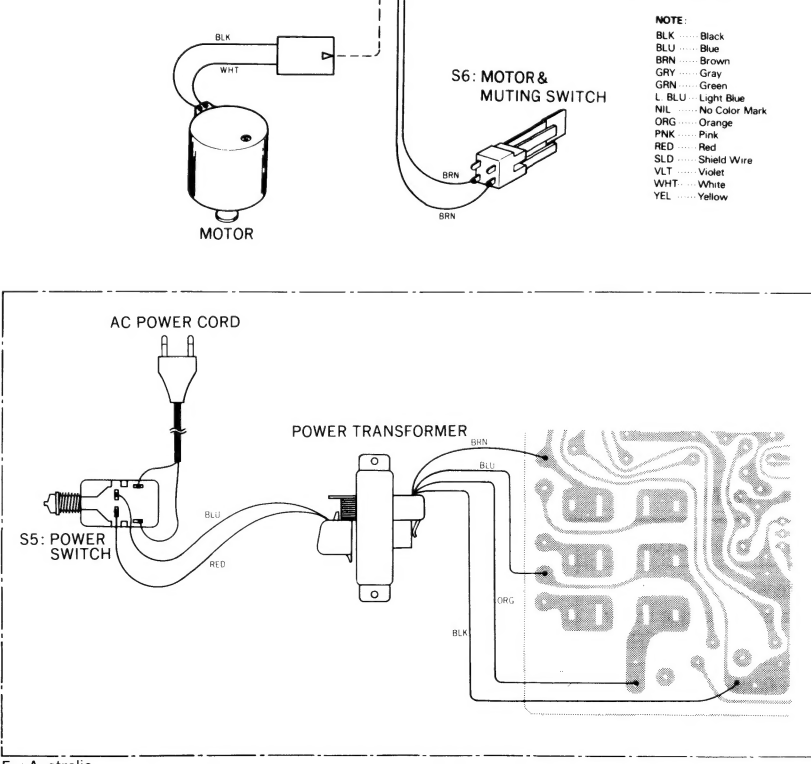
WIRING CONNECTION DIAGRAM

NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

| Ref. No. | Part No. | Part Name & Description |
|--|-----------|---------------------------------------|
| TRANSFORMERS | | |
| T7, 8 | QLT2D26X | Headphone Transformer |
| T401 | QLPD33ELC | Power Transformer |
| *For All European areas except United Kingdom. | | |
| | QLPN48ELC | " |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| | QLPA47ELC | " |
| *For Australia. | | |
| COILS | | |
| L1, 2 | QLM927 | MPX Filter |
| L3, 4 | QLQM0333 | Record Equalizer Coil |
| L5, 6 | QLQC0331 | Bias Trap Coil |
| L301 | QLB0188 | Bias Oscillation Coil |
| SWITCHES | | |
| S1 | QSSI205T | Slide Switch (Record/Playback Select) |
| S2 | QES1490 | Lever Switch (Tape Select) |
| | QES1485 | " |
| S3 | QES1492 | Lever Switch (Dolby IN/OUT Select) |
| | QES1487 | " |
| S4 | QES1491 | Lever Switch (Input Select) |
| | QES1486 | " |
| | QES1486 | " |
| S5 | QSW2228A | Power Switch |
| *For All European areas except United Kingdom and for Australia. | | |
| | QSW1206AA | " |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| S6 | QSB0186 | Leaf Switch (Muting Switch) |
| S7 | QSR1409H | AC Power Voltage Select Switch |
| *For All European areas except United Kingdom. | | |
| | QSR1407H | " |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| JACKS | | |
| J1 | QJA0257H | Microphone Jack |
| J2 | QEJ5002S | Line IN/OUT (DIN) |
| J3 | QJA0249C | Headphone Jack |



For Asia, Latin America, Middle East and Africa areas.



For Australia.

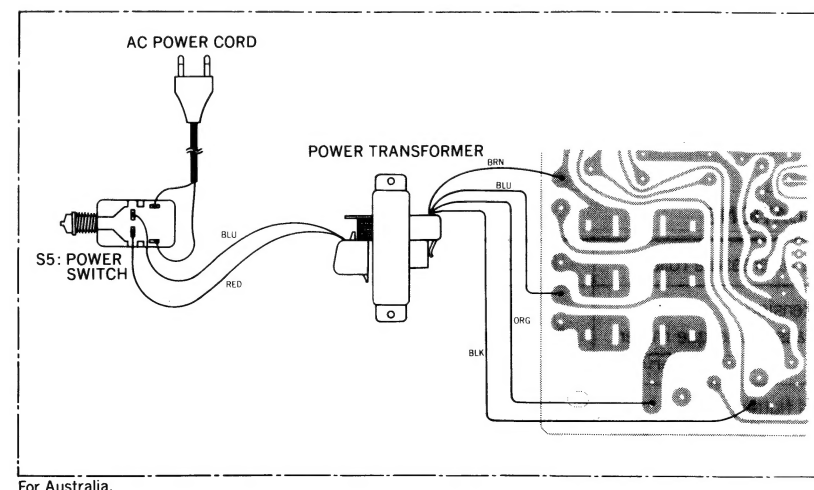
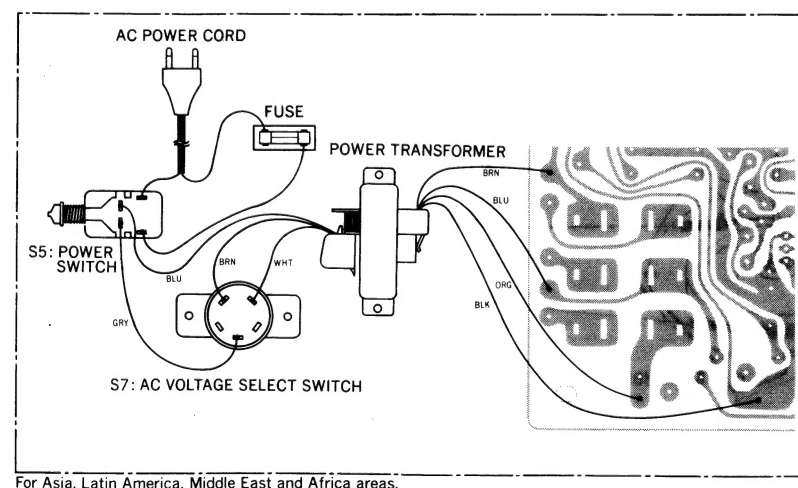
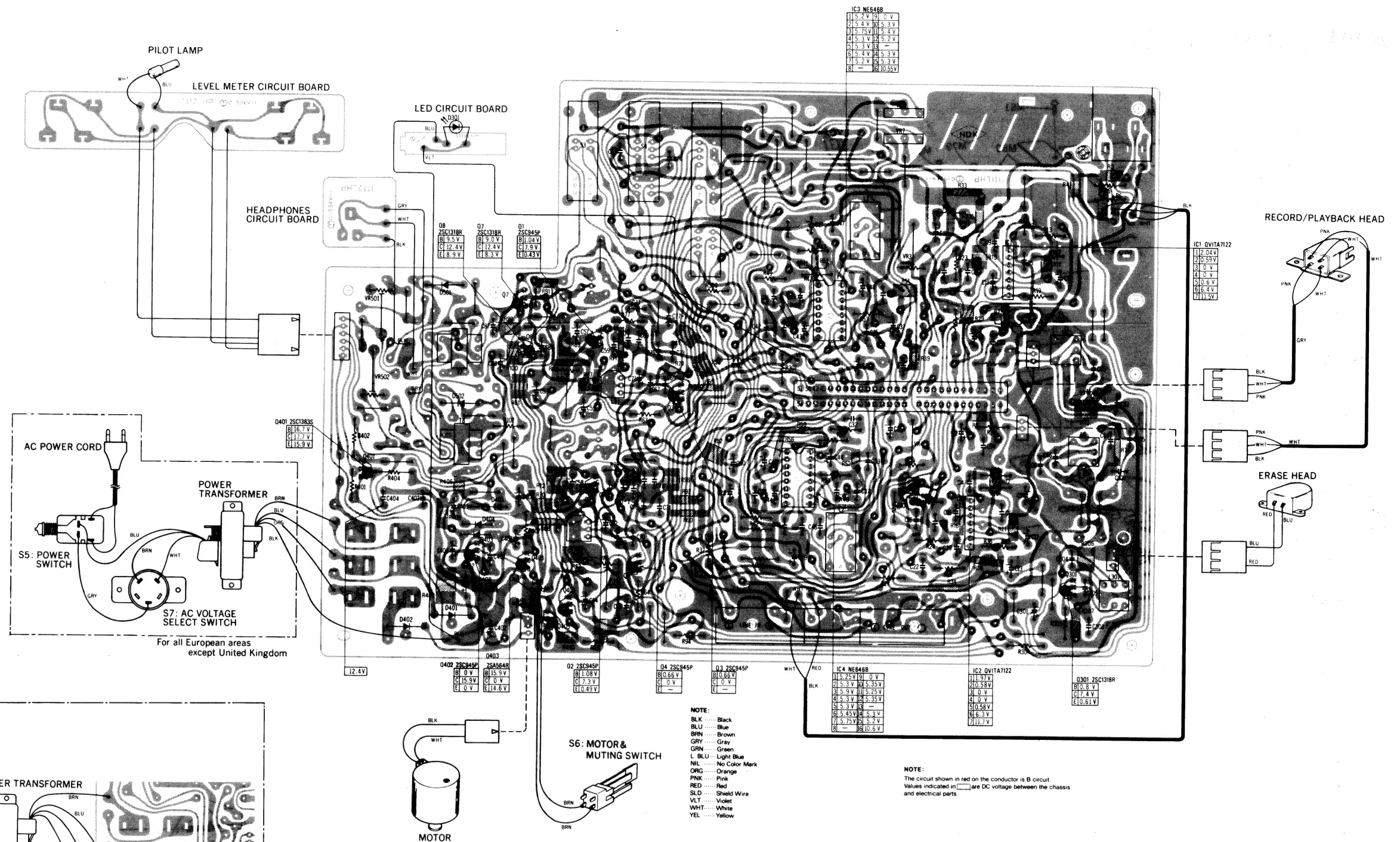
NOTE:
 BLK Black
 BLU Blue
 BRN Brown
 GRY Gray
 GRN Green
 L. BLU Light Blue
 NL No Color Mark
 ORG Orange
 PNK Pink
 RED Red
 SLD Shield Wire
 VLT Violet
 WHT White
 YEL Yellow

NOTE:
 The circuit shown in red on the conductor is B circuit
 Values indicated in _____ are DC voltage between the chassis and electrical parts

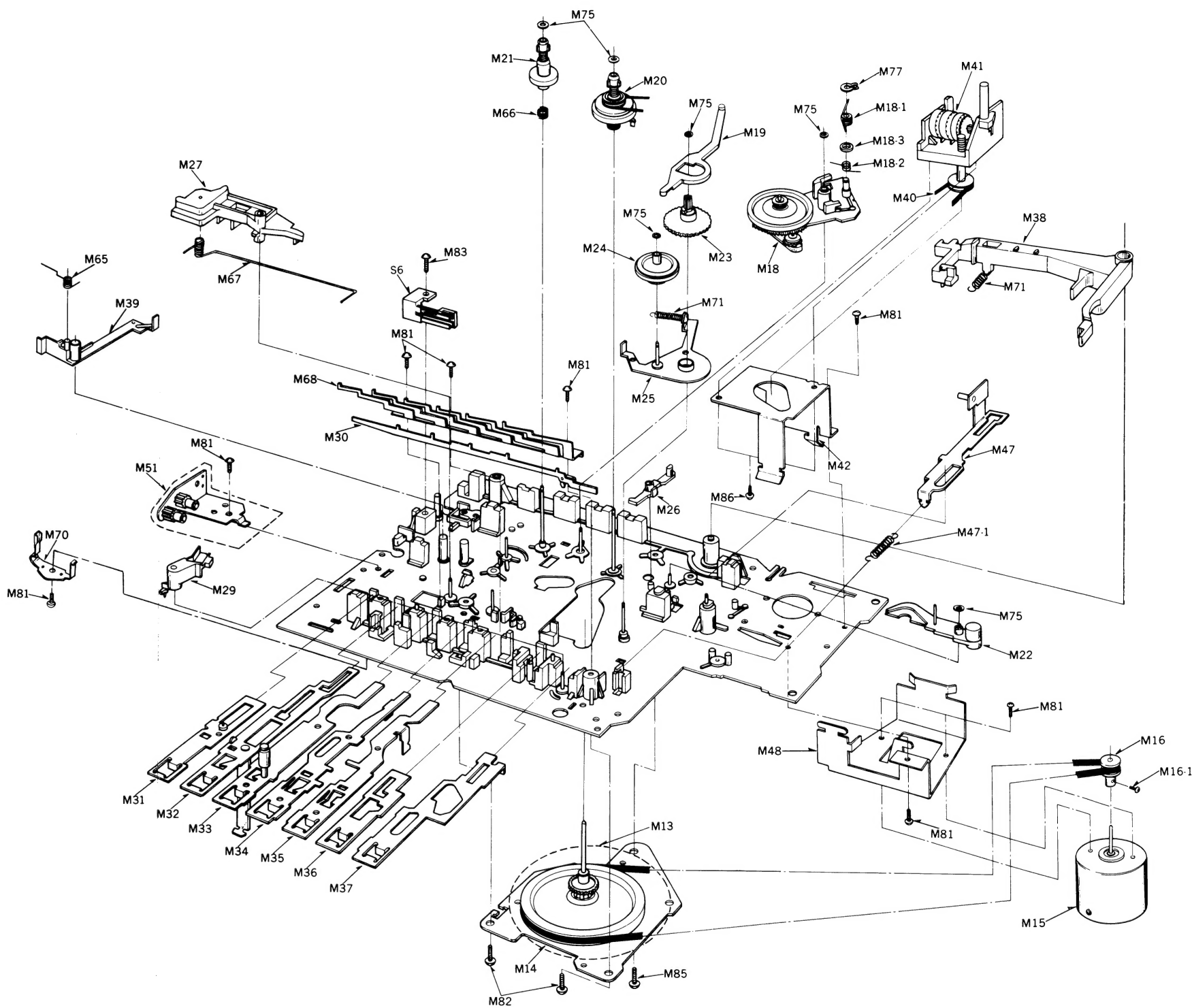
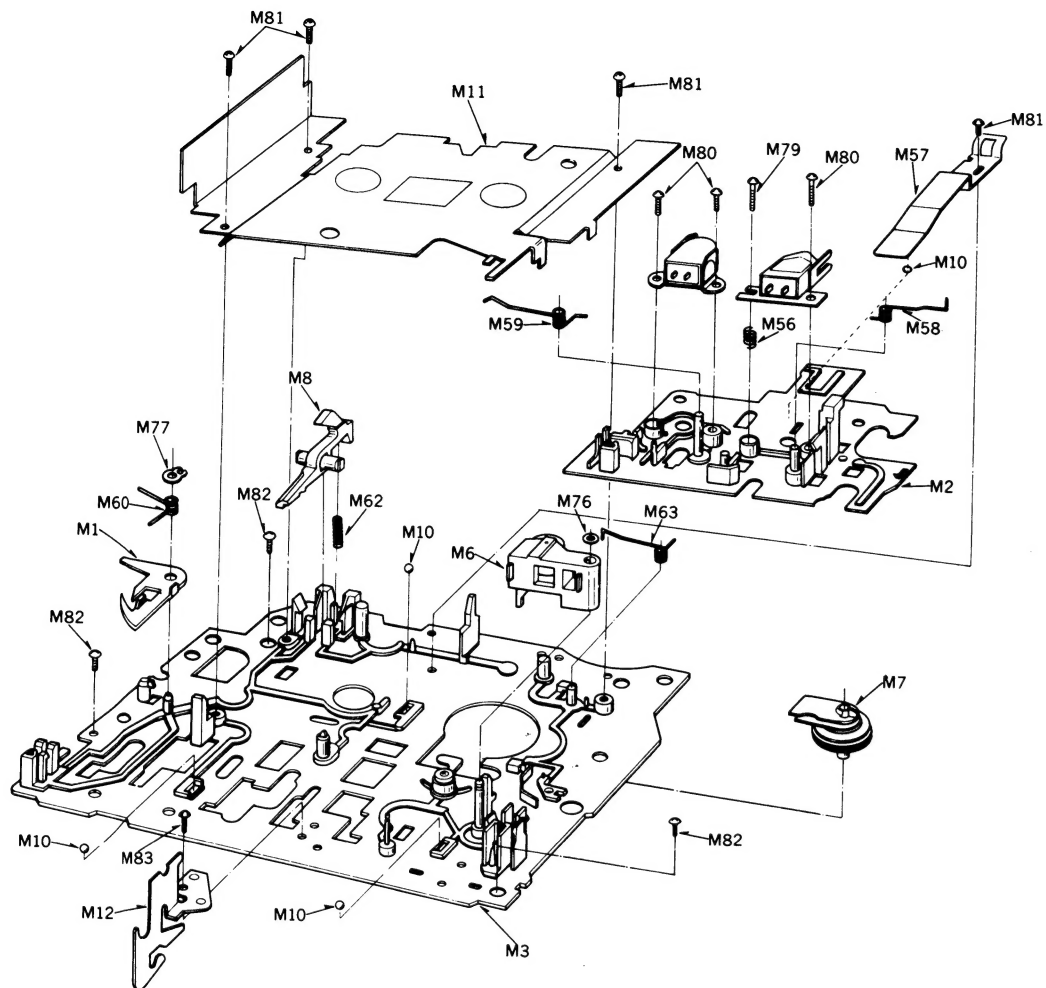
WIRING CONNECTION DIAGRAM

NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

| Ref. No. | Part No. | Part Name & Description |
|--|-----------|---------------------------------------|
| TRANSFORMERS | | |
| T7.8 | QLT2D26X | Headphone Transformer |
| T401 | QLPD33ELC | Power Transformer |
| *For All European areas except United Kingdom. | | |
| | QLPN48ELC | " |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| | QLPA47ELC | " |
| *For Australia. | | |
| COILS | | |
| L1, 2 | QLM927 | MPX Filter |
| L3, 4 | QLQM0333 | Record Equalizer Coil |
| L5, 6 | QLQC0331 | Bias Trap Coil |
| L301 | QLB0188 | Bias Oscillation Coil |
| SWITCHES | | |
| S1 | QSSI205T | Slide Switch (Record/Playback Select) |
| S2 | QES1490 | Lever Switch (Tape Select) |
| | QES1485 | " |
| | QES1492 | " |
| S3 | QES1487 | Lever Switch (Dolby IN/OUT Select) |
| | QES1491 | " |
| S4 | QES1486 | Lever Switch (Input Select) |
| | QES1486 | " |
| S5 | QSW2228A | Power Switch |
| *For All European areas except United Kingdom and for Australia. | | |
| | QSW1206AA | " |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| S6 | QSB0186 | Leaf Switch (Muting Switch) |
| S7 | QSR1409H | AC Power Voltage Select Switch |
| *For All European areas except United Kingdom. | | |
| | QSR1407H | " |
| *For Asia, Latin America, Middle East and Africa areas. | | |
| JACKS | | |
| J1 | QJA0257H | Microphone Jack |
| J2 | QEJ5002S | Line IN/OUT (DIN) |
| J3 | QJA0249C | Headphone Jack |



EXPLODED VIEWS



| Ref. No. | Part No. | Part Name & Description | Ref. No. | Part No. | Part Name & Description |
|-------------------------|-----------|--------------------------------|----------|----------|---------------------------------|
| MECHANICAL PARTS | | | | | |
| M1 | QML2898 | Pause Lock Plate | M36 | QMR1622 | Stop Rod-A |
| M2 | QMK1612 | Head Base Plate | M37 | QMR1621 | Eject Rod-A |
| M3 | QXK2051 | Upper Base Plate Assembly | M38 | QML3038 | Switch Arm |
| M6 | QXL1057 | Pressure Roller Lever Assembly | M39 | QML3287 | Brake Lever |
| M7 | QXI0098 | Takeup Idler Assembly | M40 | QDB0240 | Counter Belt |
| M8 | QML3051 | Erase Safety Lever | M41 | QDC0110 | Tape Counter |
| M10 | QDK1012 | Steel Ball 2.5φ | M42 | QMA3676 | Counter Angle |
| M11 | QMF2063 | Chassis Cover | M47 | QXR0403 | Eject Rod-B |
| M12 | QMA3169 | Shaft Reinforcement Angle | M47-1 | QBT1619 | Idler Spring |
| M13 | QXF0131 | Flywheel Assembly | M48 | QMA3414 | Motor Angle |
| M14 | QXH0239 | Flywheel Retainer Assembly | M51 | QXG1031 | Damper Gear Assembly |
| M15 | MMC6A2HYA | Motor | M55 | QBN1515 | Connection Spring |
| M16 | QXP0572 | Motor Pulley Assembly | M56 | QBC1278 | Head Spring |
| M16-1 | XSN2+3 | Screw ⊕2×3 | M57 | QBP1841 | Head Base Plate Pressure Spring |
| M17 | QDB0236 | Flywheel Belt | M58 | QBN1488 | Pressure Roller Spring |
| M18 | QXL1136 | Fast Forward Arm Assembly | M59 | QBN1481 | Playback Spring |
| M18-1 | QBN1517 | Fast Forward Spring | M60 | QBN1480 | Pause Lock Spring |
| M18-2 | QBN1559 | Fast Forward Arm Spring | M62 | QBC1193 | Safety Lever Spring |
| M18-3 | QMC0080 | Collar | M63 | QBN1513 | Idler Spring |
| M19 | QML3040 | Cam Lever | M65 | QBN1574 | Brake Spring |
| M20 | QXD0067 | Takeup Reel Table Assembly | M66 | QBC1344 | Back Tension Spring |
| M21 | QXD0084 | Supply Reel Table Assembly | M67 | QBN1555 | Pause Spring |
| M22 | QXL1055 | Auto-Stop Lever Assembly | M68 | QBP1664 | Operation Rod Spring |
| M23 | QDG1096 | Cam Gear | M70 | QBP1662 | Lock Rod Spring |
| M24 | QXG1026 | Auto-Stop Gear Assembly | M71 | QBT1682 | Lock Holding Spring |
| M25 | QXL1037 | Gear Lever Assembly | M75 | QBW2008 | Snap Washer |
| M26 | QML3042 | Auto-Stop Obstruction Lever | M76 | QBW2046 | " |
| M27 | QML3217 | Pause Lever | M77 | XUB4FT | Stop Ring C4φ |
| M29 | QML3124 | Lock Release Arm | M79 | QH01226 | Screw |
| M30 | QMR1735 | Lock Rod Assembly | M80 | XSN2+10 | Screw ⊕2×10 |
| M31 | QXR0342 | Pause Rod Assembly | M81 | XTN26+5B | Tapping Screw ⊕2.6×5 |
| M32 | QXR0465 | Record Rod Assembly | M82 | XTN3+10B | Tapping Screw ⊕3×10 |
| M33 | QXR0344 | Playback Rod Assembly | M83 | XTN26+8B | Tapping Screw ⊕2.6×8 |
| M34 | QMR1624 | Rewind Rod-A | M84 | XSN26+3 | Screw ⊕2.6×3 |
| M35 | QMR1623 | Fast Forward Rod-A | M85 | XTN3+25B | Tapping Screw ⊕3×25 |
| | | | M86 | QXK2052 | Lower Base Plate |

SPECIFICATIONS

| | |
|-----------------------------|--------------|
| Pressure of pressure roller | 350±50 gr |
| Takeup tension | |
| • Use cassette torque meter | 50±15 gr·cm |
| ... QZZSRKCT | |
| Wow and flutter | |
| • Use test tape ... QZZCWAT | 0.08% (WRMS) |